



Radiological Search and Response Training

INL dispersion device training prepares first responders for radiological emergencies

One of the most harrowing prospects faced by military and civilian public safety officials is the threat of radioactive contamination being intentionally dispersed in highly populated areas. Although the U.S. Nuclear Regulatory Commission says that radiation levels created by most probable sources -- whether a dirty bomb or some other type of dispersal device -- is not toxic enough to terminally affect a mass population of people or cause severe illness, public fear and the possible need for costly cleanup make it an issue that demands attention and preparation. As nuclear energy

systems and technology continue to expand globally, the proliferation of radiological and actinide materials must be carefully safeguarded.

The U.S. Department of Energy's Idaho National Laboratory plays a key role in assuring proper preparation through the staging of specialized training for military and civilian first responders who are called upon to initially assess and help stabilize an accident or extreme hazard scene.

About Training

Researchers and scientists at INL have developed several, flexible training programs to

evaluate advanced techniques and equipment testing for performing radiological material searches and mitigation efforts. Courses are tailored to the participant's potential need to search for, interact and render-safe a radiological dispersal device or other potentially dangerous materials. Courses can also be designed for specific study areas including radiography, search techniques or first responder and consequence management skills.

The training segments vary in duration, with a typical course presented in a four or five day instructional program. All

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National Security



An U.S. military soldier takes a radiation measurement during a source search exercise at INL.



ratory owns several facilities representative of most aspects of a nuclear fuel cycle and prototypic industrial facilities. This unique, access-controlled location allows participants an opportunity to gain detection, isotope identification and measurement experience in a real-world environment, while hazards associated with these materials are safely demonstrated.

The laboratory's ability to house, handle and control a wide range of radioactive materials – including sealed sources, transuranic wastes, fissile materials and spent nuclear fuels – provides participants with a realistic training location. In addition, search activities often involve strategic placement of radioactive sources so that actual detection and identification by participants can take place.

For more information

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training includes a combination of classroom lectures by notable INL experts, field measurement activities and facility tours. Lecture topics include the nuclear fuel cycle, RDD materials, the biological effects of radiation, radiation detection principles, criticality safety and radiography. Participants are also offered opportunities to conduct search exercises which include a collection of radioactive materials in controlled settings for measurements. The intent of the exercises is to demonstrate the operation – and potential shortcomings – of common measurement and evaluation instruments in a realistic setting.

During field measurements, participant use their radiation detection and identification equipment to measure significant gamma and neutron emitting radioactive sources. They are able to observe spectra from spent nuclear fuel target assemblies including metallic, oxide, nitride, and other nuclear fuels through the use of a specially designed material housing. These materials provide significant radiation fields and help to demonstrate the limitations of common radiation detection equipment

and to help inform decision makers about the best equipment and techniques in a given situation. The ability to work with source materials and fuels also provide participants the opportunity to learn skills for spectral identification, the effects of shielding and moderation and time spent practicing radiation safety principles.

INL Expertise

INL has a long history of providing radiological training and assistance to local, state and federal agencies in preparation for radiological accidents and threats. INL's expertise, unique infrastructure assets and scientific discipline combine to provide a one-stop location for evaluating advanced nuclear energy systems and providing realistic radiological response training to enhance national security.

The INL instructional staff provides continuous technical support during all classroom and field measurement activities. Field measurement exercises are performed at several operating nuclear and radiological facilities offering participants the advantage of training in an industrial type setting. In addition, the labo-



Members of the U.S. military conduct measurement readings during an INL training exercise.